

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A device for handling and recovering kinetic energy in a turbocharged engine in a fluid, comprising:

- a bladed reversible impeller adapted to operate both as an autonomous centrifugal blower pushing the fluid under pressure to a fluid outlet and as a device to recover energy;
- a reversible engine/generator integral with coupled to the bladed impeller; and
- a fluid conveyor containing the impeller, which co-operates with the impeller to handle and recover the kinetic energy of incoming fluid, the fluid conveyor comprising a convergent spiral of a fluid inlet adapted configured to receive an incoming fluid from a turbocharger compressor turbine output and a divergent spiral of the fluid outlet configured to output said fluid to an engine intake;

- wherein the bladed impeller is formed with a single series of blades, and wherein said single series of blades are configured to both (1) drive the fluid from the fluid inlet to the fluid outlet when the reversible engine/generator is acting as an engine, and (2) be driven by fluid flowing from said fluid inlet to said fluid outlet when the reversible engine/generator is acting as a generator.

- wherein the impeller blades define continuous channels communicating at a first end with the fluid outlet and at a second opposite end with the fluid inlet,
the impeller being either moved by a fluid supplied through said fluid inlet or by the reversible engine/generator in such a way as to be able to operate as a centrifugal blower delivering fluid under pressure through said fluid outlet.

2. (Canceled)

3. (Previously Presented) The device of claim 1, wherein said fluid conveyor includes a duct for recirculation or partial exhaust of excess fluid.

4. (Previously Presented) The device of claim 1, wherein said engine/generator is integral with the bladed impeller by means of a shaft.

5. (Previously Presented) The device of claim 1, wherein said engine/generator is a high efficiency permanent magnet brushless electric three-phase synchronous machine which is supplied, as an engine, with alternate three-phase variable high frequency current, and outputs as a generator, an alternate three-phase current.

6. (Previously Presented) The device of claim 1, wherein the device is a single body and further comprises:

- an engine/generator casing having a first cooler;
- a rear cover integral with the casing; and
- a front cover having a second cooler, integral with the fluid conveyer,

said single body containing the engine/generator, and the bladed impeller.

7. (Previously Presented) The device of claim 6, wherein said engine/generator is integral with the bladed impeller by means of a shaft, and wherein said shaft is inserted in the front and rear covers by means of antifriction bearings.

8. (Previously Presented) The device of claim 1, in which said device is made of aluminum alloy or stainless steel or titanium or ceramic material or composite materials such as fiber reinforced techno polymer.

9. (Previously Presented) An Overcharged engine including a turbo supercharger, comprising a device as in any of the previous claims, assembled in series between said turbo supercharger and the fluid inlet.

10. (Previously Presented) The engine of claim 9, for use on a road trailer.

11. (Previously Presented) The engine of claim 9, for use on an airplane.

12. (Previously Presented) The engine of claim 9, for use on a ship.

13. (Previously Presented) The engine of claim 9, wherein it is a two-stroke-cycle internal combustion engine.

14. (Canceled)